The wastewater pretreatment at Baker Commodities consists of the following equipment, listed in order of flows:

1. Product enters the plant by truck into the rendering plant where it is screened for solids removal. It is then moved from the common collection point to the surge tank.

2. The 5000 gallon surge tank is used to equalize and regulate flow using a 3 inch variable speed pump operating at flow of approximately 40 GPM. This tank is set at the highest elevation in the plant allowing the process to flow by gravity from this point.

3. The flow is than directed through a set of 3 mechanical catch basins piped in series. There are two 6X6X30 mechanical gravity separators followed by a 6X6X55 mechanical gravity separator. A cationic polymer is added to the effluent of this separator before flowing to the CAF.

4. The Hydro-Cal CAF is a flotation device operating on the air bubbles entrained in the water by cavitation process that floats solids, fats, oil and grease to the surface for removal to the rendering plant process. An anionic polymer is added to the influent at this time. Cavitation is provided by an externally mounted Nikuni regenerative turbine pump.

5. The effluent from the Hydro-Cal flows to a Komline Sanderson DAF. The DAF operates on the same basic principle as the Hydro-Cal; i.e., the flotation of solids, fats, oil and grease to the surface using dissolved air. If needed, additional anionic polymer is added to the influent of this unit.

6. The water from the effluent of the DAF flows to a Weir Box . Water of condensation from the cooking process and the odor abatement system is blended at this time. The weir box provides a sampling point for water quality. The water is than pumped to a common lift/pump station.

7. The water at the lift station is mixed with water from the boiler blow down, office building and sanitary use. From the lift station the water is than pumped to the aeration tanks.

8. The aeration tanks consist of 2 – 600,000 gallon tanks. The tanks are above ground 60 feet diameter by 32 feet high. The normal operating level of these tanks is about 15 feet or 300,000 gallons. Each tank is aerated by two 100 hp blowers feeding approximately 670 fine bubble membranes. Bacteria enzymes when needed for BOD reduction are added to these tanks. The effluent from these tanks goes into our pump station pumping directly to Billerica POTW.

9. The compliance sampling is done at the pump before pumping to the Billerica POTW. The effluent composite sampler is after the pump.

Baker Commodities - Wastewater Flow Diagram